

EXHIBIT R

In The Matter Of:

*APPLERA CORP. v.
MICROMASS*

*DONALD DOUGLAS
August 24, 2001*

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(1) next sentence:
(2) "With an ion trap, ions of a
(3) selected range of mass to charge ratios
(4) are trapped or stored for a period of
(5) time (which can be quite lengthy) due to
(6) electric fields generated with
(7) electrodes."
(8) Do you agree with that statement?
(9) **MR. POPOVSKI:** Objection. Vague.
(10) **THE WITNESS:** Yes.
(11) **MR. SCHULER:**
(12) **Q:** Okay. Do you agree that that distinguishes an ion
(13) trap from the invention that you disclosed in the
(14) 736 patent?
(15) **MR. POPOVSKI:** Objection. Vague. Calls for speculation,
(16) and a legal conclusion.
(17) **THE WITNESS:** It was two parts to the sentence. It says
(18) ions are trapped and stored for a period of time,
(19) which can be quite lengthy. That's very different
(20) from the ion guide. But both ion guides and traps
(21) have electric fields generated with electrodes.
(22) **MR. SCHULER:**
(23) **Q:** So, the fact that an RF field is generated with an
(24) electrode, as opposed to a rod set, is not a
(25) distinguishing feature between an ion trap and the

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(1) 736 invention?
(2) **MR. POPOVSKI:** Objection. Mischaracterizes. Calls for
(3) legal conclusions.
(4) **THE WITNESS:** Yes, it's a very different device. It's a
(5) three dimensional — It stores ions in three
(6) dimensions, or confines ions in three dimensions;
(7) whereas, an ion guide only confines ions in two
(8) dimensions.
(9) **MR. SCHULER:**
(10) **Q:** Do you agree with me that a device that stores
(11) ions in electric fields is fundamentally different
(12) from what is claimed in the 736 patent?
(13) **MR. POPOVSKI:** Same objection. Vague.
(14) **THE WITNESS:** Well, there's no ion storage in the 736
(15) patent.
(16) **MR. SCHULER:**
(17) **Q:** So, an ion guide that has some trapping would not
(18) be practicing the invention that you disclosed in
(19) the 736 patent?
(20) **MR. POPOVSKI:** Objection. Calls for a conclusion — Calls
(21) for legal conclusions. Speculation. And the
(22) question is vague.
(23) **THE WITNESS:** There's nothing in the 736 patent about
(24) trapping.
(25) **MR. SCHULER:**

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(1) **Q:** And you agree with this principle statement that
(2) it distinguishes the invention from an ion trap
(3) that ions are stored for some period of time in
(4) the trap?
(5) **MR. POPOVSKI:** Objection. Vague.
(6) **THE WITNESS:** No, there's other differences, as well. There
(7) are other differences, as well.
(8) **MR. SCHULER:**
(9) **Q:** Okay. I realize there may be other differences,
(10) but do you agree that that one difference, in and
(11) of itself, distinguishes the Schaaf article and
(12) ion trap from the invention disclosed in the 736
(13) patent?
(14) **MR. POPOVSKI:** Objection. Calls for legal conclusions, and
(15) the question is vague.
(16) **THE WITNESS:** Yeah. I mean, you are asking me to make a
(17) legal decision. I can't comment on that. As a
(18) scientist, I would say trapping ions, and not
(19) trapping ions is a big difference.
(20) **MR. SCHULER:**
(21) **Q:** Now, you are familiar with the mathematics of
(22) motions in a quadrupole ion trap, are you not?
(23) **A:** Somewhat.
(24) **Q:** And we have motion in the X direction. Right?
(25) **A:** Yeah. Sorry. In traps, or quads?

(1) **Q:** In traps.
(2) **A:** In traps, yes.
(3) **Q:** And we have motion in the Y direction. Correct?
(4) **A:** Yes.
(5) **Q:** And then, the three-dimensional aspect, is that
(6) from the motion in the Z or Z direction?
(7) Correct?
(8) **A:** Yes.
(9) **Q:** Okay. And in the linear quadrupole we have motion
(10) in the X direction. Correct?
(11) **A:** Yes.
(12) **Q:** And we have motion in the Y direction. Correct?
(13) **A:** Yes.
(14) **Q:** And we have no Z or Z direction. Right?
(15) **A:** Well, there's a Z direction, but there's no
(16) confinement in the Z direction.
(17) **Q:** Okay. So, it's — Mathematically, when people are
(18) discussing motion — ion motion in a linear
(19) quadrupole, they ignore the motion in the Z
(20) direction. Isn't that right?
(21) **MR. POPOVSKI:** Objection. Vague, and calls for speculation.
(22) **THE WITNESS:** No. Well, what's the simple answer. There is
(23) no simple answer, because the Z motion determines,
(24) for example, how long the ions spend in the linear
(25) quadrupole, and that's an important variable. So,

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(1) the Z motion is still important, so people do
(2) think about it. So, it's not quite correct to say
(3) that nobody is concerned about the Z motion.
(4) **MR. SCHULER:**
(5) **Q:** But as far as performing its function, the Z
(6) direction is important in the quadrupole ion trap
(7) because you're confining them within the trap.
(8) Is that right?
(9) **A:** Yes.
(10) **MR. POPOVSKI:** Objection. Vague.
(11) **THE WITNESS:** Well, I mean —
(12) **MR. SCHULER:**
(13) **Q:** Among other reasons.
(14) **A:** — I can't give a complete description of ion
(15) traps, but ions are stored in X, Y and Z, yes.
(16) **Q:** And it's true that in both ion traps and in
(17) quadrupole mass analysers, or quadrupole fields
(18) that the motion of an ion in any one direction is
(19) independent of its motion in the other direction.
(20) Correct?
(21) **MR. POPOVSKI:** Objection. Calls for speculation.
(22) **THE WITNESS:** In an ideal device, yes.
(23) **MR. SCHULER:**
(24) **Q:** Okay. Ideal meaning that the fields are properly
(25) generated?

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(1) **A:** Meaning it's a perfect quadrupole field, and
(2) there's no collisions, for example.
(3) **Q:** Okay. And that is in fact how most mathematical
(4) modelling was done of quadrupole fields.
(5) Is that right?
(6) **MR. POPOVSKI:** Objection. Calls for speculation. The
(7) question is vague.
(8) **THE WITNESS:** That's how the simplest models of traps are
(9) described.
(10) **MR. SCHULER:**
(11) **Q:** And it's true, is it not, that if I know the
(12) direction — the effects of collisions on ion
(13) motion in the X and Y direction in an ion trap, I
(14) could then apply those mathematical equations,
(15) with very simple adjustments for the fact that
(16) it's a linear quadrupole, to the behaviour of ions
(17) under the same conditions in a linear quadrupole.
(18) Correct?
(19) **MR. POPOVSKI:** Objection.
(20) **MR. SCHULER:** Yes, in a linear quadrupole.
(21) **MR. POPOVSKI:** I'll object to the question as vague, and
(22) calls for speculation.
(23) **THE WITNESS:** The equations that describe X and Y motion in
(24) a linear quadrupole — in a linear quadrupole are
(25) similar to the equations that describe X and Y

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(1) concerning Schaaf in the reexamination proceeding?
 (2) MR. POPOVSKI: Objection Asked and answered numerous times
 (3) already.
 (4) THE WITNESS: No one consulted with me.
 (5) MR. SCHULER:
 (6) Q: Okay.
 (7) A: This is the first time I've seen this.
 (8) Q: Okay. Had they consulted with you, I take it you
 (9) would have disclosed your patent concerning
 (10) trapping ions in a quadrupole?
 (11) MR. POPOVSKI: Objection. Calls for speculation and legal
 (12) conclusions.
 (13) THE WITNESS: I do have a patent for trapping ions in a
 (14) linear quadrupole, but I don't know when that —
 (15) what year that is.
 (16) (Exhibit 16 for identification: United States Patent
 (17) 5,179,278 dated January 12, 1993.)
 (18) MR. SCHULER:
 (19) Q: Doctor Douglas, I handed you what's been marked as
 (20) Douglas Exhibit 16, which, for the record, is
 (21) United States Patent Number 5,179,278, dated
 (22) January 12th, 1983, issued to Donald J. Douglas.
 (23) It's entitled Multipole Inlet System for Ion
 (24) Traps.
 (25) I take it that you recognize Exhibit

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(1) Number 16, Doctor Douglas?
 (2) A: Yes.
 (3) Q: Is this the patent to which you were referring in
 (4) your previous answer?
 (5) MR. POPOVSKI: Take your time, and read through it.
 (6) THE WITNESS: Okay. What was the question again?
 (7) MR. SCHULER:
 (8) Q: Very simply, is this the patent to which you were
 (9) referring in your previous answer?
 (10) A: I believe it is.
 (11) Q: Okay. And you see the date is January 12th, 1993?
 (12) A: Yes.
 (13) Q: And do you see that the date — If you look with
 (14) me on page 1 of Exhibit 10, it's dated
 (15) September 30th — the next page — September 30th,
 (16) 1997?
 (17) A: Sorry. Where is that?
 (18) Q: It's —
 (19) A: Oh, I see it. Okay. Yeah.
 (20) Q: Okay. So, approximately four years prior to the
 (21) submission of Exhibit Number 10 to the Patent
 (22) Office, you had patented the idea of utilizing a
 (23) quadrupole ion guide as an ion trap.
 (24) Correct?
 (25) MR. POPOVSKI: Objection. Calls for legal conclusions, and

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(1) speculation.
 (2) THE WITNESS: Well, we did have a patent in 19 —
 (3) apparently, in 1993 on trapping ions in a linear
 (4) ion guide.
 (5) MR. SCHULER:
 (6) Q: And had someone consulted with you about whether
 (7) an ion transmission rod set was fundamentally
 (8) different from an ion trap prior to making
 (9) statements to the Patent Office in 1997, I take it
 (10) you would have made them aware of the fact that an
 (11) ion guide can be used as an ion trap.
 (12) Correct?
 (13) MR. POPOVSKI: Objection. Calls for legal conclusions, and
 (14) speculation.
 (15) THE WITNESS: I might have said that I don't know what this
 (16) means legally, but maybe you should consider
 (17) this — have a look at this.
 (18) MR. SCHULER:
 (19) Q: If you would turn to column 4, line 23. Do you
 (20) see it says:
 (21) "When the quadrupole rods 44
 (22) are placed in the path of the ion stream
 (23) 46 between the ion source 12 and the ion
 (24) trap 58, the rods 44 can be used as a
 (25) trap to store ions?"

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(1) Do you see that?
 (2) A: Yes.
 (3) Q: Down below, on line 34, it says:
 (4) "(Alternatively this can be
 (5) accomplished by placing a higher voltage
 (6) on plate 52 or orifice 50, and omitting
 (7) grid 70.)"
 (8) Do you see that?
 (9) A: Yeah. I just want to see the figure to see what
 (10) these are.
 (11) Yes.
 (12) Q: Okay. And then, line 51 — it's tough to say,
 (13) because it's in between 50 and 51 — it says:
 (14) "An advantage of using
 (15) quadrupole RF only rods as a pre-trap
 (16) for an ion trap is that the RF only rods
 (17) can store more ions than an ion trap and
 (18) can be used to store ions while the ion
 (19) trap is performing its analysis."
 (20) Do you see that?
 (21) A: Yes.
 (22) Q: And you agree with me that it might be pertinent
 (23) to evaluating the veracity of these statements
 (24) about the differences between an ion trap and an
 (25) AC-only ion guide that an AC-only ion guide

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(1) actually can trap more ions than a traditional
 (2) electrode ion trap.
 (3) Correct?
 (4) MR. POPOVSKI: Objection. Calls for speculation, legal
 (5) conclusions.
 (6) THE WITNESS: Yeah. I don't know how relevant this would be
 (7) in a legal sense.
 (8) MR. SCHULER:
 (9) Q: In a scientific sense, do you agree it would be
 (10) relevant?
 (11) MR. POPOVSKI: Same objection. Calls for speculation, legal
 (12) conclusions.
 (13) THE WITNESS: No. Scientifically, it's different, because
 (14) in the 3D trap you confine ions in the Z direction
 (15) radio frequency field, but here there's no RF
 (16) field in the Z direction. So, the trapping
 (17) mechanism is different —
 (18) — in the Z direction. So, the trapping
 (19) mechanism in the Z direction here is different.
 (20) MR. SCHULER:
 (21) Q: You agree with me that it would be relevant
 (22) scientifically to know that an ion guide can
 (23) function as a trapping mechanism.
 (24) Correct?
 (25) MR. POPOVSKI: Objection. Mischaracterizes his testimony.

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(1) Besides the fact that it's irrelevant, it's vague,
 (2) and calls for legal conclusions.
 (3) THE WITNESS: All I can say is maybe.
 (4) MR. SCHULER:
 (5) Q: Now, if you would turn back with me to — We put
 (6) it aside awhile ago, and I apologize, but it's
 (7) the — it's your article with Doctor French,
 (8) Exhibit 8.
 (9) Do you have it in front of you?
 (10) A: Yes.
 (11) Q: Okay. Now, in the first column — Well, in the
 (12) abstract —
 (13) Did you write the abstract?
 (14) A: Let's see. I probably did.
 (15) Q: Okay. Do you see, about midway down in the
 (16) abstract, it says:
 (17) "Thus 'collisional focusing'
 (18) appears to be analogous to effects seen
 (19) in three-dimensional ion traps?"
 (20) A: Yes.
 (21) Q: And you wrote that?
 (22) A: Yeah.
 (23) Q: Then, at the bottom of the first column on the
 (24) left-hand side, the last line, there's a sentence
 (25) that begins: